



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

RBT400313-5
Job Sheet 176929



Part No: RBT400313-5

Job Qty: 7 ea

Part Name: Adapter



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 5/3/18

Job Tracking No:

Due Date: 5/18/18

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG RBT400313 Rev 1 IPP Rev A 18.02.26 New issue DP Verify DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	7 Ea		5/18/18	0.00	0.00	Start Up Machining-2		JB 18-05-08
110	Lathe Conv	7 pcs		5/18/18	0.00	1.75	Lathe Conv-1		JB 18-05-08
120	QC	7 pcs		5/18/18	0.00	0.00	QC2 Machining-4		JB 18-05-08
130	QC	7 pcs		5/18/18	0.00	0.00	QC8 Machining-4		JB 18-05-08
140	Large Fab	7 pcs		5/18/18	0.00	2.33	Large Fab 3		
150	QC	7 pcs		5/18/18	0.00	0.00	QC9		
190	Outsource	7 pcs		5/18/18	0.00	0.00	Outsource12		
200	Packaging	7 pcs		5/18/18	0.00	0.00	Packaging2		
210	QC	7 pcs		5/18/18	0.00	0.00	QC6		
220	Packaging	7 pcs		5/18/18	0.00	0.00	Packaging3		DAS FL
230	QC21-SA	7 Ea		5/18/18	0.00	0.00	QC21		21 MAY 10 2018

Part Op 110 - 1-Machine as per DWG. DWG REV: _____ 2-Deburr

Descriptions: 140 - Weld as per DWG sheet 2. Align -3 to -5 using half inch hardware. End of -11 pin must be on center line.

190 - Issue P/O to Groupe Altech; PO _____ -Black oxide finish, MIL-C-13924C Class 1 -Certificate of Conformity is required

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
MT-4140QT-R2.250	AISI 4140 Q&T Round Bar	1.8620 ft (.266 ea)	110-Lathe Conv	
RBT400313-3	Plate	7 Ea (1 ea)	140-Large Fab	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
110-Lathe Conv	MT-4140QT-R2.250	2	13	0
140-Large Fab	RBT400313-3	7	7	0

Part Specifications

Specifications could not be found.

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

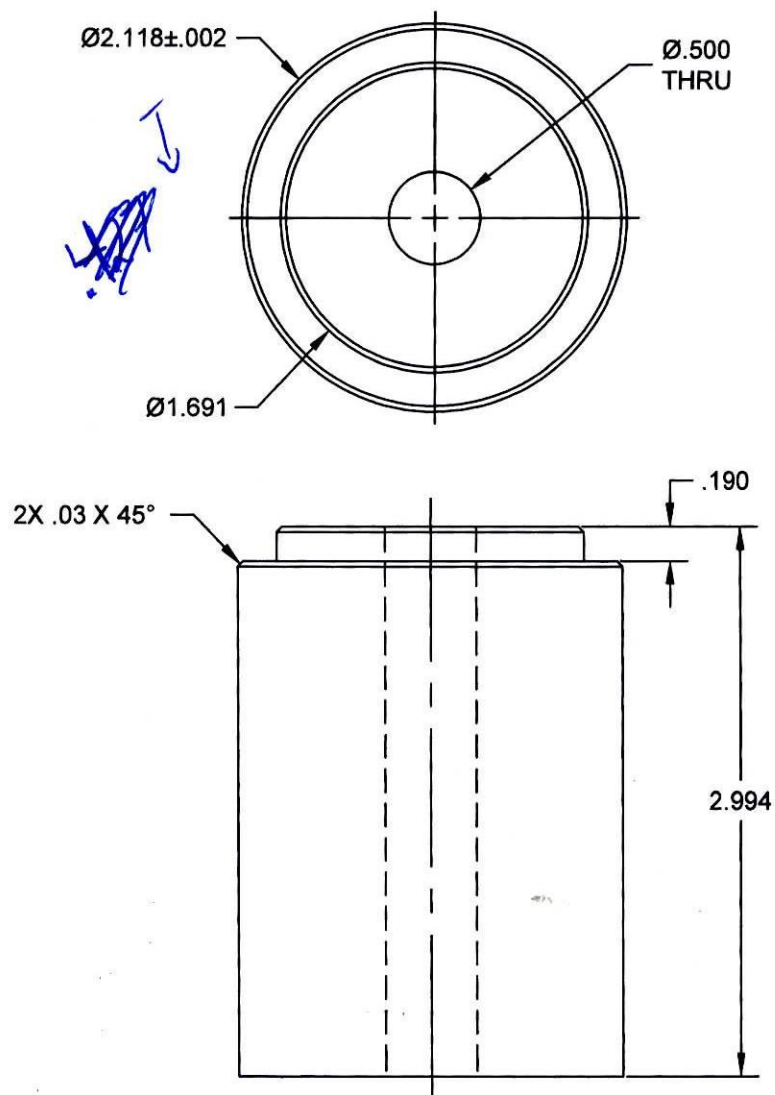
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : ☐					

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REVISIONS			
REV	DESCRIPTION	DATE	INITIAL APPROVED
1	-5 CH'D DIMS WAS Ø2.118 IS Ø2.118±.002, WAS 2.964 IS 2.994.	5/12/14	DPD GE



(-5)
ADAPTER

RED BARN MACHINE	
TITLE MAIN XSMN BACKLASH TOOL	
DWG NO. RBT400313-5	REV 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON:	
DECIMALS	FRACTIONS ± 1/32
.XXX ± .005	ANGLES ± .5°
.XX ± .01	
.X ± .1	
UNLESS OTHERWISE SPECIFIED 1. BREAK ALL SHARP EDGES .015 x 45° PR .015 R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
SCALE 1:1	DATE 1-7-11
SHEET 4 of 6	
DRAWN BY: CLOUGH	
APPROVED <i>D West</i>	
HEAT TREAT	
FINISH SEE -1 WELDMENT	
SPEC	
USED ON MODEL	
BELL 204, 205, 212	

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

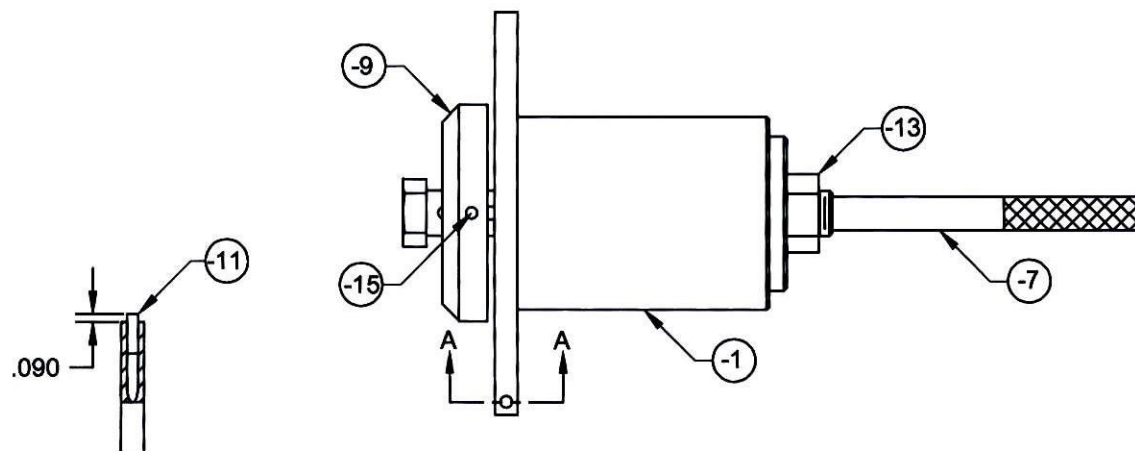
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

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REVISIONS				
REV	DESCRIPTION	DATE	INITIAL	APPROVED
A	CH'D BOM -11 FROM #1/8 x 7/16, ADDED NOTE REF. BELL #. CORRECTED -1 VIEW ADDED MISSING LINES. MOVED NOTE 2 TO -17 & CORRECTED NOTE 1. CORRECTED -3 VIEW ADDED MISSING LINES. CH'D -9 #.125 HOLE TO LIMIT DIMENSION. ADDED -17 PLATE ASSEMBLY.	5/16/12	RJC	SE
1	-1 ADDED REF. DIMS AND NOTES. -3 ADDED Ø2.120+ .002-.000 ∇ .030 HOLE, CH'D DIMS WAS .250 IS (.250), WAS (.090) IS .090, WAS (Ø.500) IS Ø.500. ADDED SECTION A-A. -5 CH'D DIMS WAS Ø2.118 IS Ø2.118±.002, WAS 2.964 IS 2.994. DELETED -17. CH'D TOLERANCE ON NON-CRITICAL PARTS.	5/12/14	DPD	GE



SECTION A-A

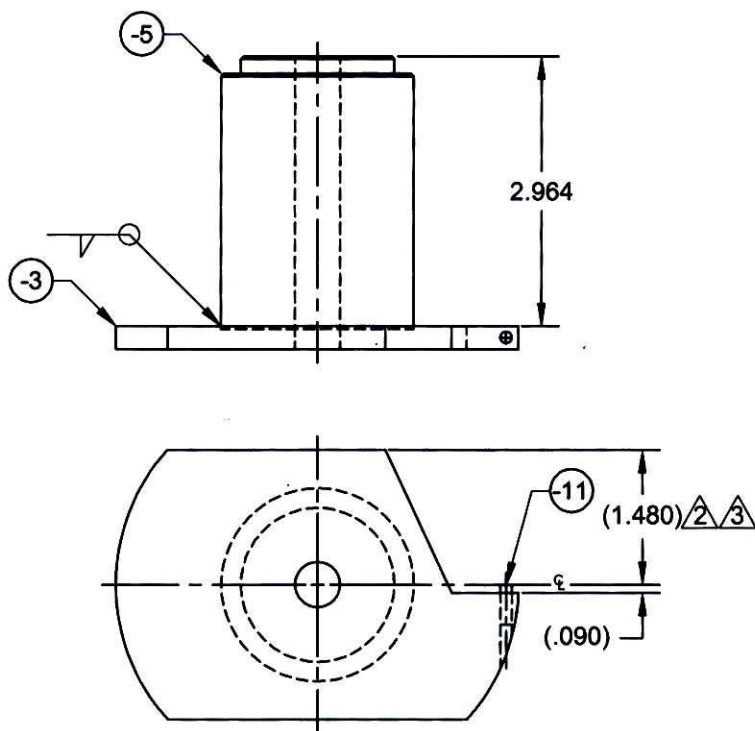
NOTE:
REF. ORIGINAL BELL #212-040-001-19GIF-1.

RED BARN MACHINE	
TITLE MAIN XSMN BACKLASH TOOL	
DWG NO. RBT400313	REV 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: DECIMALS XXX ± .005 XX ± .01 X ± .1 FRACTIONS ± 1/32 ANGLES ± .5°	DRAWN BY: CLOUGH APPROVED: <i>D. Wed</i> HEAT TREAT FINISH SPEC
UNLESS OTHERWISE SPECIFIED 1. BREAK ALL SHARP EDGES .015 x 45° PR .015 R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	USED ON MODEL BELL 204, 205, 212
SCALE 1:2	DATE 1-7-11 SHEET 1 of 6

ASSY QTY	ASSY QTY	B/O	PART #	UNIT QTY	DESCRIPTION	MATERIAL	B/O INFORMATION OR SPECIFICATIONS	Pg.
			-1	1	ADAPTER WELDMENT			2
	1		-3		PLATE	A36 PLATE	1/4 x 3-1/16 x 4-1/2	3
	1		-5		ADAPTER	4140 Q&T	Ø2-1/8 x 3-1/8	4
			-7	1	BOLT	STEEL GRD.5	1/2-13 UNC-2A x 8 MCMaster-CARR #91247A740 (MOD.)	5
			-9	1	SHOE	4140 Q&T	Ø2-3/8 x 5/8	6
	1	B/O	-11		DOWEL PIN	18-8 S.S.	Ø1/8 x 1/2 MCMaster-CARR #90145A471	1
		B/O	-13	1	HEX NUT	STEEL	1/2-13 UNC-2B MCMaster-CARR #95462A033	1
		B/O	-15	1	ROLL PIN	STEEL	Ø1/8 x 1 MCMaster-CARR #98296A883	1
ASSY	-1							

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REVISIONS				
REV	DESCRIPTION	DATE	INITIAL	APPROVED
A	CORRECTED -1 VIEW ADDED MISSING LINES, MOVED NOTE 2 TO -17 & CORRECTED NOTE 1.	5/16/12	RJC	SE
1	-1 ADDED REF. DIMS AND NOTES.	5/12/14	OPD	GE



NOTES:

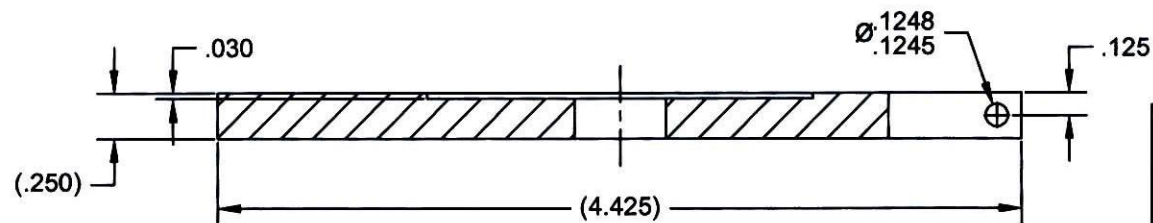
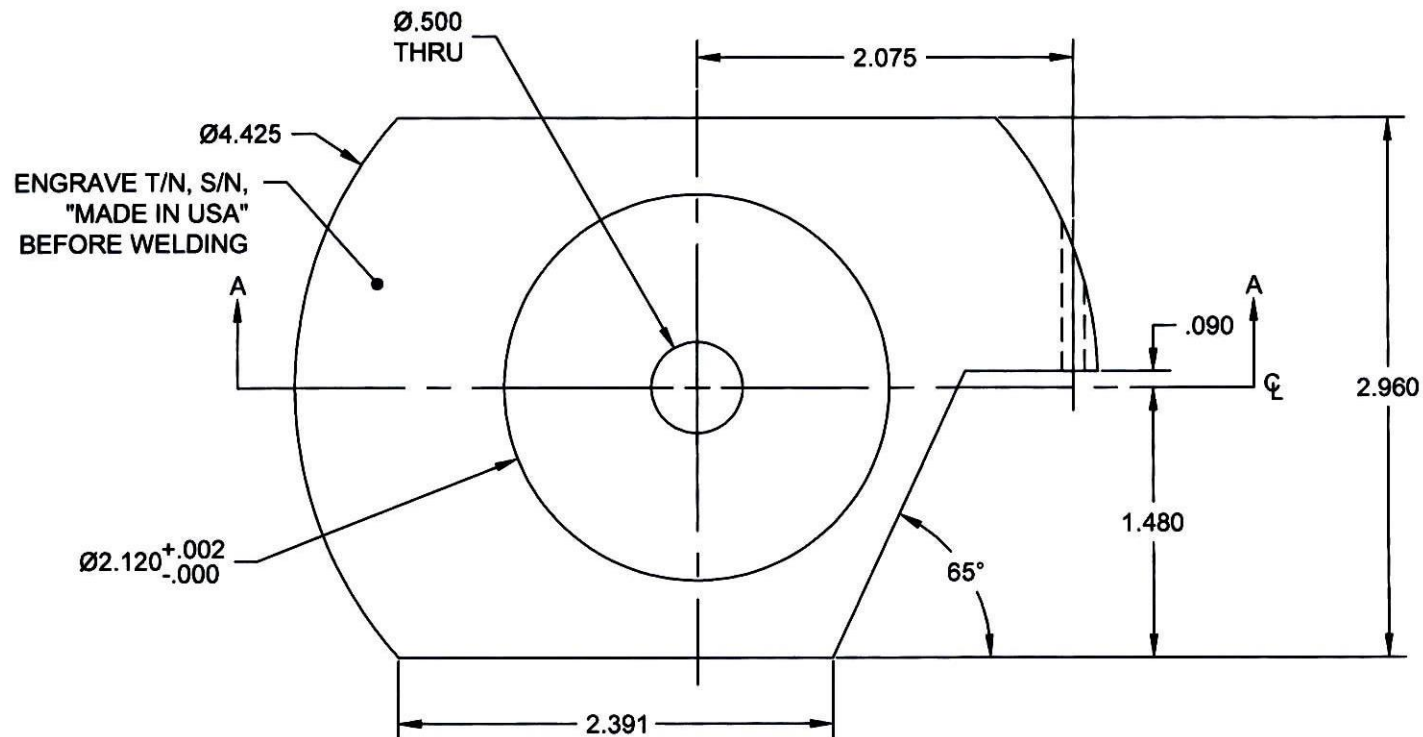
1. ALIGN -3 TO -5 USING 1/2" HARDWARE.
2. END OF PIN (-11) MUST BE ON CENTERLINE.
3. MILL -11 HEIGHT TO MEET .090 AFTER ASSY.

-1
ADAPTER WELDMENT

RED BARN MACHINE	
TITLE MAIN XSMN BACKLASH TOOL	
DWG NO. RBT400313-1	REV 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: DECIMALS XXX ± .005 XX ± .01 X ± .1 FRACTIONS ± 1/32 ANGLES ± .5°	
UNLESS OTHERWISE SPECIFIED 1. BREAK ALL SHARP EDGES .015 x 45° PR .015 R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
DRAWN BY: CLOUGH	APPROVED:
HEAT TREAT	
FINISH BLACK OXIDE	
SPEC	
USED ON MODEL BELL 204, 205, 212	
SCALE 1:2	DATE 1-7-11
SHEET 2 of 6	

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REVISIONS				
REV	DESCRIPTION	DATE	INITIAL	APPROVED
A	CORRECTED -3 VIEW ADDED MISSING LINES.	5/16/12	RJC	SE
1	-3 ADDED Ø2.120+0.002-.000 ∇ .030 HOLE, CH'D DIMS WAS .250 IS (.250), WAS (.090) IS .090, WAS (Ø.500) IS Ø.500. ADDED SECTION A-A.	5/12/14	DPD	GE



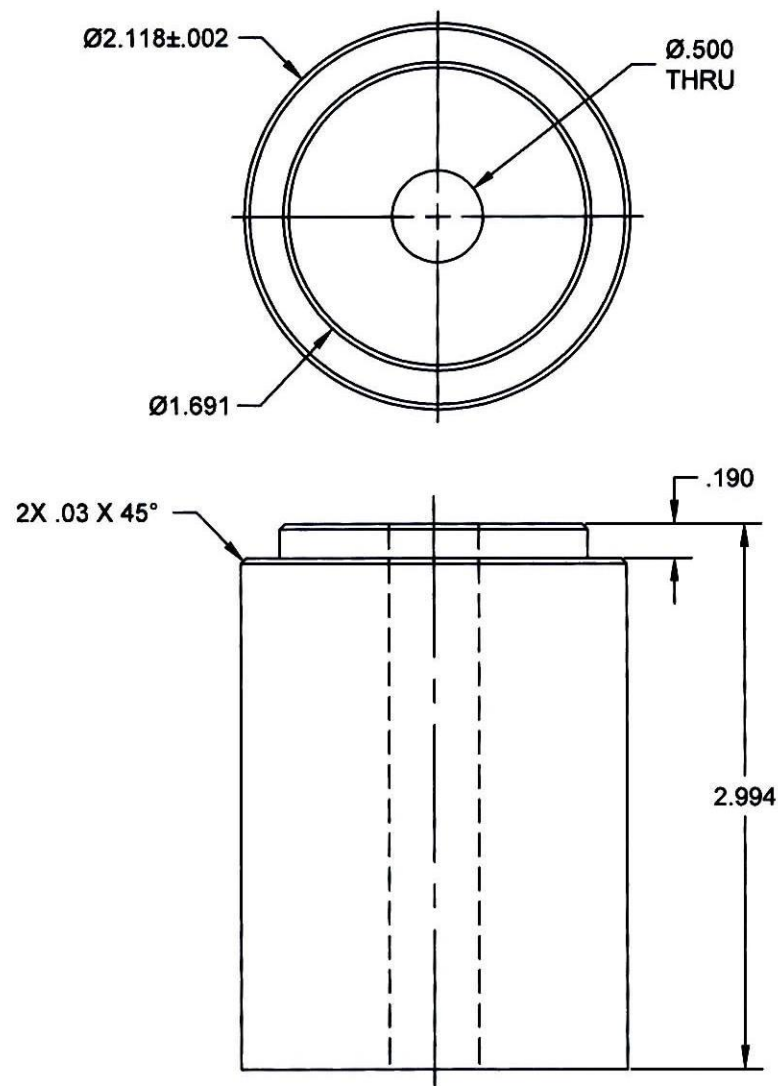
SECTION A-A

(-3)
PLATE

RED BARN MACHINE	
TITLE MAIN XSMN BACKLASH TOOL	
DWG NO. RBT400313-3	REV 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON:	DRAWN BY: CLOUGH
DECIMALS .XXX ± .005	APPROVED <i>D. Well</i>
XX ± .01	HEAT TREAT
X ± .1	FINISH SEE -1 WELDMENT
FRACTIONS ± 1/32	SPEC
ANGLES ± .5°	USED ON MODEL
UNLESS OTHERWISE SPECIFIED	
1. BREAK ALL SHARP EDGES	
.015 x 45° PR .015 R	
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
SCALE 1:1	DATE 1-7-11
SHEET 3 of 6	

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REVISIONS				
REV	DESCRIPTION	DATE	INITIAL	APPROVED
1	-5 CH'D DIMS WAS Ø2.118 IS Ø2.118±.002, WAS 2.964 IS 2.994.	5/12/14	DPD	GE



(-5)
ADAPTER

RED BARN MACHINE	
TITLE MAIN XSMN BACKLASH TOOL	
DWG NO. RBT400313-5	REV 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON:	
DECIMALS	FRACTIONS ± 1/32
.XXX ± .005	ANGLES ± .5°
.XX ± .01	
X ± .1	
UNLESS OTHERWISE SPECIFIED	
1. BREAK ALL SHARP EDGES	
.015 x 45° PR .015 R	
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
SCALE 1:1	DATE 1-7-11
SHEET 4 of 6	
DRAWN BY: CLOUGH	
APPROVED <i>D. Med</i>	
HEAT TREAT	
FINISH SEE -1 WELDMENT	
SPEC	
USED ON MODEL	
BELL 204, 205, 212	

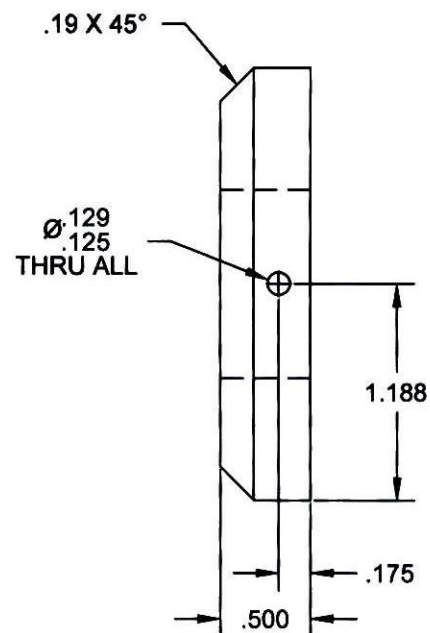
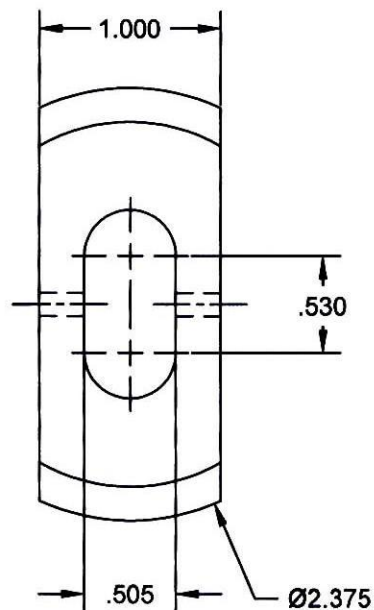
REVISIONS				
REV	DESCRIPTION	DATE	INITIAL	APPROVAL



 RED BARN MACHINE			
TITLE MAIN XSMN BACKLASH TOOL			
DWG NO. RBT400313-7			REV 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: DECIMALS .XXX ± .005 .XX ± .01 X ± .1		DRAWN BY: CLOUGH APPROVED: <i>D. Weid</i> HEAT TREAT FINISH: BLACK OXIDE SPEC	
UNLESS OTHERWISE SPECIFIED 1. BREAK ALL SHARP EDGES .015 x 45° PR .015 R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING		USED ON MODEL BEL 204, 205, 212	
SCALE 1:2	DATE 1-7-11	SHEET 5 of 6	

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REVISIONS				
REV	DESCRIPTION	DATE	INITIAL	APPROVED
A	CH'D -9 Ø.125 HOLE TO LIMIT DIMENSION PER G.E.	5/16/12	RJC	GE



(-9)
SHOE

RED BARN MACHINE	
TITLE MAIN XSMN BACKLASH TOOL	
DWG NO. RBT400313-9	REV 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON: DECIMALS .XXX ± .005 .XX ± .01 .X ± .1	
FRACTIONS ± 1/32 ANGLES ± .5°	
UNLESS OTHERWISE SPECIFIED 1. BREAK ALL SHARP EDGES .015 x 45° PR .015 R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
DRAWN BY: CLOUGH	APPROVED: <i>D. Weil</i>
HEAT TREAT	
FINISH BLACK OXIDE	
SPEC	
USED ON MODEL	
BELL 204, 205, 212	
SCALE 1:1	DATE 1-7-11
SHEET 6 of 6	



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www.dartaerospace.com

Container No: S069548



Part: RBT400313-5

Job No: 176929

Serial No/Batch: S069548

Revision: 1

Inspector:

Date: 05/08/18